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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/406,837	09/28/1999	NABIL N. SEDDIGH	T8465054US	1987
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GOWLING, LAFLEUR & HENDERSON LLP 160 ELGIN STREET SUITE 2600 OTTAWA, ON K1P 1C3 CANADA			MEHRA, INDER P	
			ART UNIT	PAPER NUMBER
			2666	

DATE MAILED: 03/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/406,837

Applicant(s)

SEDDIGH ET AL.

Examiner

Inder P Mehra

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 2/7/05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24, 26 and 28-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26 is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-17, 19, 20, 22-24 and 28-30 is/are rejected.
- 7) ☒ Claim(s) 8, 18 and 21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☒ Interview Summary (PTO-413) Paper No(s). 3/18/05.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other:

***Response to Amendment***

1. This is in response to an amendment dated 7/05/04 which has been fully considered and made of record. Based on this amendment, claims 1, 7, 11, 15, 17, 20, 22 (amended three times), claims 2-3, 6, 9-10, 13-14, 16, 18, 21, 26 and 28-30 (amended once), claims 4-5, 8, 12, 19, 23-24 (amended twice), have been amended. Claims 25 and 27 (27 previously added in amendment A) have been cancelled. Claims 1-24, 26, and 28-30 are now pending.

2. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 10-12, 14, 22-23 and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Chiu et al** (US Patent No. 6,526,022), hereinafter, Chiu, in view of **Hamilton** (US Patent No. 6,392,003), hereinafter, Hamilton

For claims, 1, 11-12, 22-23, and 28-29, Chiu discloses, "a method of transmitting data in a data communications network (Communication between computers in a computer network can be established by one of several methods. These include unicast messaging (where a source station and a destination station exchange messages over a point to point path), broadcast

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communication (where a sender station transmits messages which may be received by all stations attached to the network, refer to col. 1 lines 54-59)), comprising the steps of:

(i) establishing a communication link between a transmitter and a receiver through a Transmission Control Protocol (TCP) handshake (**The TCP portion of TCP/IP (The Connection Protocol) is a layer 4 protocol and establishes reliable communication between the end stations by causing retransmission of packets using the IP protocol, refer to col. 4 lines 17-20**), the communications link having a congestion window set to an initial length (the sender uses fractions of the maximum rate as the initial rate and increment. For example, initial rate=10% of maximum rate increment=10% of maximum rate, refer to col. 13 lines 60-67) ;

(ii) transmitting data packets in TCP from the transmitter to the receiver (**and establishes reliable communication between the end stations, refer to col. 4 lines 17-20**);

(iii) detecting a missing data packets at the receiver, as recited by claims 1, 12 (Congestion is detected at the receivers and repair heads. Receivers detect and report congestion based on missing packets, refer to col. 18 lines 43-48;

(iv) sending a negative acknowledgment from the receiver to the transmitter for the missing data packet (NACK messages are unicast to the heads and there is no NACK suppression to head. NACK messages can contribute significantly to congestion as NACK implosion, refer to col. 36 lines 4-8), the receiver being unresponsive to any packets from the transmitter unless the receiver detects the missing data packet (Congestion is detected at the receivers and repair heads. Receivers detect and report congestion based on missing packets, refer to col. 18 lines 43-48). Implicitly, it means that receiver does not have to acknowledge the receipt of each packet, but Nack to only missing packet in order to avoid implosion of ACKs;

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(v) decreasing, at the transmitter, the length of the congestion window in response to receipt of the negative acknowledgment (in response to congestion, the rate is decreased., refer to col. 13 lines 20-25); and

(vi) re-transmitting the missing data packet(Upon receipt of a NACK, the transmitter queues the packet from its retransmit cache and retransmits the packet, refer to col. 3 lines 65-67).

\* transmitter having a round trip timer that is set upon sending each data packet, **as recited by claim 22**, refer to col. 4 lines 1-7.

Chiu does not disclose expressly, “the receiver being unresponsive to any packets from the transmitter”. But Chiu discloses “receivers detect and report congestion based on missing packets, refer to col. 18 lines 43-48). Implicitly, it means that receiver does not have to acknowledge the receipt of each packet, but Nack to only missing packet in order to avoid implosion of ACKs, refer to col. 4 lines 40-50.

Chiu does not disclose the following limitations expressly which are disclosed by Hamilton, as follows

- setting a timer, **as recited by claim 11** (NAK wait timer is started), refer to col. 19 lines 57-59;
- where the missing packet is not received at the receiver in response to the negative acknowledgment before expiry of missing –packet timer, sending a further negative acknowledgment, recited by claims 23 and 29, refer to col. 20 lines 10-11;

Hamilton'993 discloses "the receiver being unresponsive to any packets from the transmitter" (To overcome the problems in the prior art, two protocols have been developed. The base protocol, generally referred to as Statistically Reliable Transmission or statistical reliability mode, relies on a probabilistic model that can be tuned to reduce the probability that any single system did not receive a message to an arbitrarily small number thus essentially ensuring that all systems receive a message refer to col. 3 lines 3-10. **The ACK requested flag is not used in the statistically reliable transmission mode, refer to col. 3 lines 40-42).**

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the capability of "using the receiver being unresponsive to any packets from the transmitter, as taught by Hamilton. The "Ack requested flags" not being used in statistical model is dictated by the sender to avoid implosion of ACKs. The suggestion/motivation to do so would have been to avoid implosion of ACKs or Nacks and to ensure the re-transmission of packets by sender to receiver upon receiving NACK message.

For claim 10, Chiu discloses, in reference to fig.2, the data communications network is an internet, refer to col. 9 lines 45-48.

For claim 14, Chiu discloses all the limitations of claim 14, dependent from claim 11, as above, with the exception of the following limitation, which has been disclosed by Hamilton, as follows:

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Hamilton discloses missing packet received within designated time and the timer value being reset (the missing packet timer is cleared upon receipt of the missing packet at the receiver), refer to col. 24 lines 32-33.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the capability of “using the timer at receiver as taught by Hamilton. The suggestion/motivation to do so would have been to avoid implosion of ACKs or Nacks and to ensure the re-transmission of packets by sender to receiver upon receiving NACK message.

5. Claims 2, 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Chiu** and **Hamilton** as applied to claims 1, 11 and 22 above, in view of **Sen et al** (US Patent No.6,208,620), hereinafter, **Sen**.

For claims 2, 9 and 13, Chiu and Hamilton disclose all the limitations of a subject matter in claims 1 and 11, as mentioned above, with the exception of the limitation, “wherein up to four duplicate negative acknowledgments are sent from the receiver”, as recited in claims 2, 9 and 13;

Sen discloses radio link protocol (RLP) three NACKS and continues until N attempts have been made (up to four--- NACKS are sent), refer to col. 5 lines 4-5.

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It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the capability of increasing multiplicity of NACKs, as taught by Sen. The NACKs are integrated (combined) into the receiver. The suggestion/motivation to do so would have been to ensure the re-transmission of packets by sender to receiver.

6. Claims 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Chiu and Hamilton** as applied to claims 1, 11 and 22 above, in view of **Gersht et al** (US Patent No. 6,405,257), hereinafter, Gersht.

For claims 3, Chiu and Hamilton disclose all the limitations of a subject matter in claims 1, as mentioned in paragraph 4 above, with the exception of the limitation, “wherein the congestion window is halved at step v of claim 1 (decreasing the length of congestion window in response to the negative acknowledgment)”; Hamilton discloses, “ reducing the transmission rate in response to Nack rates being high, refer to col. 16 lines 20-37;

Gersht discloses reduces the congestion window size by half each time source node receives a congestion indicator (wherein the congestion window is halved), refer to col. 35-43;

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the capability of reducing the size of window to half in response to NACK. The NACKs are integrated (combined) into the receiver, whereas the size of window is combined with the transmitter or sender. The suggestion/motivation to do so would have been to avoid congestion.



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7. Claims 4-6, 15-16, 19, and 30, are rejected under 35 U.S.C. 103(a) as being unpatentable over **Chiu and Hamilton**, as applied to claims 1, 11 and 22 above, further, in view of **Kumar** (US Patent No. 6,269,080).

For claims 4-6, 15-16, and 30, Chiu and Hamilton disclose all the features of the Subject matter and claim limitations of claim 15 with the exception of the limitation,” setting a round-trip timer at the transmitter upon sending the packet ; determining the round-trip time, recited by claim 16, and “increasing the congestion window if no negative acknowledgment for the missing packet is received before expiry of the round trip timer”; and congestion window is doubled, as recited by claim 6;

Kumar discloses setting a round-trip timer at the transmitter upon sending the packet, as recited by claims 4 and 15; and “increasing the congestion window if no negative acknowledgment for the missing packet is received before expiry of the round trip timer, as recited by claims 5 and 15, fig. 12 B steps 1252 and 1257, and col. 14 lines 8-14 and col. 14 lines 33-37; determining the round trip time ( $T_{sub.2}$ ), refer to col. 9 lines 60-62, and congestion window is doubled, as recited by claim 6, refer to col. 14 lines 33-36;

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the capability of increasing the time of window (timer). The round trip timer can be implemented by combining the timer in the sender 108 of network 104 as taught by Hamilton , refer to fig. 6. The suggestion/motivation to do so would have been to increase the duration of the round-trip timer to wait for Nack resulting in less traffic of NACKs in the network.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Chiu and Hamilton**, as applied to claims 1, 11 and 22 above, and further in view of **Natarajan et al** (US Patent No. 6,538,988), hereinafter, Natarajan.

For claim 7, Chiu and Hamilton disclose all the features of subject matter and limitations of claim 7, including re-transmitting the missing packet. refer to Hamilton's col. 3 line 60, col. 14 lines 13-18, with the exception of, "*sending a keep-alive request from the transmitter to the receiver, and setting---- time-out timer to detect a---- time-out, responsive to keep-alive request;*

Natarajan discloses, in reference to figs. 1 and 2, *sending a keep-alive request 231 from the transmitter to the receiver, and setting-----a time-out timer 223 to detect a re-transmission time-out, ; responsive to keep-alive request 232*; step 243 of fig. 2, refer to col.5 line 21, col. 5 lines 25-27 and col. 3 lines 34-67 and col. 8 lines 38-41, col. 10 lines 15-20 ;

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the capability of sending keep-alive request message and also setting time-out timer from sender to receiver. The time-out timer, which is located (combined) at the sender, is initiated by the sender at the time of sending keep-alive request message to receiver. The suggestion/motivation to do so would have been to test the status of communication between sender and receiver in order to avoid congestion in the network.

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9. Claims 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Chiu and Hamilton**, in view of **Kumar**, as applied to claims 4, 6 and 15 above, and further in view of **Dudley et al** (US Patent (5,754,754), hereinafter, Dudley.

For claim 17, Chiu, Hamilton, and Kumar disclose all the features and limitations of subject matter of invention in the claim 17 with the exception of, “the step of sending a round trip time update request to the receiver”. Hamilton discloses the receiver being responsive to the missing packet, refer to col. 15 lines 4-5; and “*timers be set based on update requests generated by every node*”, refer to col. 2 lines 60-63;

Dudley discloses the step of sending a round trip time update request to the receiver, refer to col. 9 lines 22-36;

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the capability of sending a round-trip time update request to the receiver as taught by Dudley. The round trip timer which is located (combined) at the sender. The suggestion/motivation to do so would have been to determine the time of round-trip communication between sender and receiver in order to avoid congestion in the network.

10. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Chiu, Hamilton, and Kumar**, as applied to claims 4-6 and 15 above, , and further in view of **Natarajan et al** (US Patent No. 6,538,988), hereinafter, Natarajan.

For claim 20, Chiu, Hamilton and Kumar disclose all the features of subject matter and limitations of claim 20, including re-transmitting the missing packet. refer to Hamilton’s col. 3 line 60, col. 14 lines 13-18, with the exception of, “*sending a keep-alive*

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*request from the transmitter to the receiver, and setting---- time-out timer to detect a---- time-out; responsive to keep-alive request;*

Natarajan discloses, in reference to figs. 1 and 2, *sending a keep-alive request 231 from the transmitter to the receiver, and setting-----a time-out timer 223 to detect a re-transmission time-out, ; responsive to keep-alive request 232*; refer to col.5 line 21 and col. 3 lines 34-67 and col. 8 lines 38-41, col. 10 lines 15-20 ;

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the capability of sending keep-alive request message and also setting time-out timer from sender to receiver. The time-out timer is located (combined) at the sending and initiated by the sender at the time of sending keep-alive request message to receiver. The suggestion/motivation to do so would have been to test the status of communication between sender and receiver in order to avoid congestion in the network.

11. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Chiu** and **Hamilton** as applied to claims 1, 11 and 22 above, and further in view of **Chien et al** (US Patent No. 5,815,667), hereinafter, Chien.

For claim 24, Chiu and Hamilton disclose all the features of the subject matter of the invention in claim 24 dependent upon claims 22, as applied to claims 1, 11 and 22 above with the exception of the limitation, “*the means for adjusting responding to expiry of the re-transmission time-out timer*”;

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Chien discloses modify the time-out function after time-out and re-transmission (*the means for adjusting responding to expiry of the re-transmission time-out timer*), refer to col. 6 lines 40-55.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the capability of modifying the time-out function after time-out and re-transmission. The time-out timer is located (combined) at the sending and initiated by the sender at the time of re-transmission of message to receiver. The suggestion/motivation to do so would have been to improve the efficiency of the data packet transference between sender and receiver in order to avoid congestion in the network.

#### ***Allowable Subject Matter***

12. Claims 8, 18, 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. Claim 26 is allowed.

#### ***Response to Arguments***

13. Applicant's arguments with respect to claims 1-24, 26, and 28-30 have been considered but are moot in view of the new ground(s) of rejection.

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*Conclusion*

14. Any enquiry concerning this communication should be directed to Inder Mehra whose telephone number is (703) 305-1985. The examiner can be normally reached on Monday through Friday from 8:30AM to 5:00 PM.

If attempt to reach the examiner by telephone is unsuccessful, the examiner's supervisor, Seema Rao , can be reached on (703) 308-5463. Any enquiry of a general nature of relating to the status of this application or processing should be directed to the group receptionist whose telephone number is (703) 305-4700.

15. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, DC. 20231

Or faxed to (703) 872-9314.

Hand -delivered responses should be brought to Crystal Park II, 2121 Crystal drive,

Arlington, VA, sixth floor (Receptionist).

*Inder Pal Mehra*

Inder Mehra

3/18/05

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